



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/362,058  | 07/28/1999  | MASANORI IWASAKI     | P99.0922            | 6363             |
| 26263   | 7590        | 02/13/2004           | EXAMINER            |                  |
| SONNENSCHN NATH & ROSENTHAL LLP<br>P.O. BOX 061080<br>WACKER DRIVE STATION, SEARS TOWER<br>CHICAGO, IL 60606-1080 |             |                      | LEE, RICHARD J      |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2613                | 24               |
| DATE MAILED: 02/13/2004   |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/362,058

Applicant(s)

IWASAKI, MASANORI

Examiner

Richard Lee

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

1. The request filed on December 11, 2003 for a Request for Continued Examination (RCE) is acceptable and a RCE has been established. An action on the RCE follows.
2. The Examiner wants to point out that the applicant's arguments from the amendment filed December 11, 2003 have been noted and considered, but are deemed moot in view of the following new grounds of rejections.
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C.102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 5 are rejected under 35 U.S.C.102(e) as being anticipated by Moreton et al (5,835,133).

Moreton et al discloses an optical system for single camera stereo video as shown in Figures 2A, 2B, and 6, and the same three dimensional image capturing apparatus as claimed in claims 1 and 5, comprising the same single solid state image sensing device (i.e., 50 of Figure 2A, and see column 6, lines 36-62) having a plurality of image capturing regions (i.e., 50a, 50b of Figure 2A), each image capture region simultaneously captures a different image on the single solid state image sensing device (see column 6, lines 36-62); a plurality of optical systems (see 30a, 30b, 35, 40a, 40b, 45, 110, 210 of Figure 2A) for forming different images of a subject in the image capturing regions, each one of the optical systems corresponding to a different one of the image capturing regions (see column 6, lines 36-62), the optical systems including a plurality of reflection means (30a, 30b of Figure 8) for reflecting rays from the subject a number of times,

Art Unit: 2613

and at least a lens (i.e., 40a, 40b, 45 of Figure 2A) provided to be closer to the solid state image sensing device than the closest reflection means to the subject among the reflection means, wherein the reflection means and the lenses of the optical systems are used to form, in the corresponding image capturing regions, separate and different images of the subject which are captured from different viewpoints having a distance therebetween (see columns 5-6); and a signal processing means for dividing a video signal from the solid state image sensing device into video signals from the image capturing device into video signals representing the images of the subject captured in the image capturing regions for capturing images of the subject from the different viewpoints (see column 6, lines 36-62, and 70 of Figure 6).

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 4 are rejected under 35 U.S.C.103(a) as being unpatentable over Moreton et al as applied to claims 1 and 5 in the above paragraph (4), and further in view of Ishihara of record (5,737,084).

Moreton et al discloses substantially the same three dimensional image capturing apparatus as above, but does not particularly disclose light shielding means provided at least between the single solid state image sensing device and the reflection means so as to separate the optical systems for forming images of the object and light limiting means provided to be closer to the subject than the reflection means for the  $(2n-1)$ -th reflection from the single solid state image sensing device along the optical systems, wherein the light limiting means prevent

Art Unit: 2613

incidence of flux of ambient light outer from rays forming each image of the subject as claimed in claims 3 and 4. However, Ishihara discloses a three dimension shape measuring apparatus as shown in Figure 8, and teaches the conventional light shielding and light limiting means (see 17, 19 of Figures 5 and 8, column 9, lines 5-22, column 11, lines 29-56) for preventing the incidence of flux of ambient light outer from rays forming the image of the subject. Therefore, it would have been obvious to one of ordinary skill in the art, having the Moreton et al and Ishihara references in front of him/her and the general knowledge of three dimensional image capturings, would have had no difficulty in providing the light shielding and light limiting features of Ishihara for the three dimensional capturing system of Moreton et al for the same well known reduction of light rays from the subject purposes as claimed.

7. Claim 7 are rejected under 35 U.S.C.103(a) as being unpatentable over Moreton et al as applied to claims 1 and 5 in the above paragraph (4), and further in view of Sekine et al of record (5,907,434) and Tabata et al of record (6,177,952).

Moreton et al discloses substantially the same three dimensional image capturing apparatus as above, further including a camera signal processor for implementing camera signal processing on the single video signal (see column 6, lines 36-62 and 70 of Figure 6); a timing generator for driving the three dimensional image capturing apparatus so as to output the images formed in the image capturing regions in the form of a single video signal (see column 6, lines 36-62); and each one of the reflection means (i.e., 30a, 30b of Figure 2A, and see columns 5-6) corresponding to a different one of the image capturing regions.

Moreton et al does not particularly disclose, though, a driver, a signal recorder for recording on a signal recording medium the processed video signal output from the camera

Art Unit: 2613

signal processor; a single reproducer for reproducing the video signal recorded on the recording medium; a video separating circuit for separating the reproduced video signal from the reproducer into signals corresponding to the image capturing regions; and display apparatus for displaying the signals corresponding to the image capturing regions, which are output from the video separating circuit as claimed in claim 7. It is noted that the processing of the left and right images of Moreton et al after being projected onto the single image sensor 50 inherently involves a driver for driving the sensor 50 for further processings/output to the display. In any event, Sekine et al discloses an image pickup apparatus as shown in Figure 15, and teaches the conventional use of a driver (i.e., 1504 of Figure 15 and see column 9, lines 63-67) for driving the CCDs 121 and 122. In addition, Tabata et al teaches substantially the same recording means, reproducing means, video separating circuit, and display apparatuses (see Figures 17, 19, 21, and 22). Therefore, it would have been obvious to one of ordinary skill in the art, having the Moreton et al, Sekine et al, and Tabata et al references in front of him/her and the general knowledge of the recording, reproducing, and display of three dimensional images, and CCD drivers, would have had no difficulty in providing the recording and reproducing of videos, video separating, and display apparatuses as taught by Tabata et al for the three dimensional imaging system of Moreton et al as well as the driver of Sekine et al for the CCD 50 of Moreton et al for the same well known driving of images for display purposes as claimed.

Art Unit: 2613

8. Claims 2 and 6 are rejected under 35 U.S.C.103(a) as being unpatentable over Moreton et al as applied to claims 1 and 5 in the above paragraph (4), and further in view of Ishihara of record (5,737,084) and Tabata et al of record (6,177,952).

Moreton et al discloses substantially the same three dimensional image capturing apparatus as above, further including a plurality of imaging side reflection means (109, 209 of Figure 2B) having reflectors provided to the obliquely outward, each one of the imaging side reflection means corresponding to one of a plurality of different portions of an image capturing region of the single solid state image sensing device, each portion of the image capturing region simultaneously captures a different image on the single solid state image sensing device (see columns 5-6); a plurality of subject side reflection means (30a, 30b of Figures 2A and 2B) having reflectors provided outer from the imaging side reflection means so as to be oblique with respect to a subject, each one of the subject-side reflection means corresponding to a different one of the imaging-side reflection means, the subject side reflection means reflecting rays from the subject to the corresponding imaging side reflection means (see columns 5-6); a plurality of lenses or lens units (i.e., 40a, 40b, 45 of Figures 2A and 2B) provided to be closer to the single solid state image sensing device than the subject side reflection means in optical paths formed from the subject to the different portions of the image capturing region so that rays from the subject to the different portions of the image capturing region are reflected by the imaging-side reflection means through the lenses or lens unit, each one of the lenses or lens units corresponding to a different one of the different portions of the image-capturing region (see columns 5-6).

Art Unit: 2613

Moreton et al does not particularly disclose, though, forming a plurality of different images of the subject which have parallax and a plurality of diaphragms, each one of the diaphragms corresponding to a different one of the lenses or lens unit, in which when each optical path has a lens, the diaphragms are provided to be closer to the subject than the corresponding lens and in which when each optical path has a lens unit, the diaphragms are provided to be closer to the subject than a lens of the corresponding lens unit, and wherein parallax which is the distance between the viewpoints is one centimeter or greater as claimed in claims 2 and 6. However, Ishihara teaches the conventional use of diaphragms within the optical path of an imaging sensor (see 12 of Figure 8) and Tabata et al teaches the general stereoscopic imagings involving parallax caused by the images and from stereoscopic imagings (see column 6, lines 25-30, column 20, lines 8-14, and Figures 13A and 13B), which obviously could be one centimeter or greater as claimed. Therefore, it would have been obvious to one of ordinary skill in the art, having the Moreton et al, Ishihara, and Tabata et al references in front of him/her and the general knowledge of three dimensional imagings, would have had no difficulty in using the diaphragm imaging optics teachings of Ishihara to provide each one of the diaphragms to a corresponding different one of the lens units within the three dimensional imaging system of Moreton et al as well recognizing that the images of the subject of Moreton et al results in a parallax effect in view of the parallax teachings of Tabata et al for the same well known three dimensional image capturing purposes as claimed.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Powell et al discloses a stereo optical guidance system for control of industrial robots.



Art Unit: 2613

10. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

or faxed to:


(703) 872-9314, (for formal communications intended for entry)

(for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).I.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Lee whose telephone number is (703) 308-6612. The Examiner can normally be reached on Monday to Friday from 8:00 a.m. to 5:30 p.m, with alternate Fridays off.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group customer service whose telephone number is (703) 306-0377.

  
RICHARD LEE  
PRIMARY EXAMINER

Richard Lee/rl

2/10/04

